CS 161 Week 10 Worksheet
References and Recursion (2 points)
Submission Due Date : 03 / 14 / 2021 11.59 pm

1. Provide two function declarations/prototypes for passing a 1-d array to a function and what is the corresponding function call.

2. Provide an example of how you would create an array of n C++ strings on the heap, read in a value for each from the user, and then deallocate/free the array from the heap?

3. Practice : Multiply a number times a matrix of size rows x cols and store the result in a different matrix of size rows x cols. The number of rows and cols, as well as the number to multiply the matrix by, are provided as command-line arguments.

First, find the two logic errors and two syntax errors.

```
//assume libraries and using namespace std
int ** create_matrix(int, int);
void fill_matrix(int **, int, int);
void multiply_matrix(int, int **, int **, int, int);
void delete_matrix(int **, int);

int main (int argc, char *argv[]) {
   int **m, **result, rows, cols, num;

   rows=atoi(argv[0]);
   cols=atoi(argv[1]);
   num=atoi(argv[2]);


   //How would you create m using create_matrix()?

   //How would you create result using create_matrix()?

   //How would you fill m using fill_matrix()?

   //How would you multiply num * m using multiply_matrix()?

   //How would you delete m and result using delete_matrix()?



   return 0;
}
```

```
int ** create_matrix(int r, int c) {
   int **p=new int*[r];
   for(int i=0; i<c; i++)
      p[i]=new int[c];
   return *p;
}

void fill_matrix(int **p, int r, int c) {
   for(int i=0; i<r; i++)
      for(int j=0; j<c; j++) {
         cout << "Enter a matrix value: ";
          cin >> p[i][j];
     }
}



void multiply_matrix(int n, int **p, int r, int c) {
   for(int i=0; i<r; i++)
      for(int j=0; j<c; j++)
         p2[i][j]=n*p[i][j];
}

//Write the function for delete_matrix() that corresponds to the
//declaration/prototype above
```